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ABSTRACT

This guide was developed to assist the nation's elementary and secondary schools and school districts address their Year 2000 (Y2K) problem. The guide is divided into three sections: Squashing the Millennium Bug Step-by-Step; Remediating Specific Types of Systems; and Appendix. The first chapter presents the following steps for tackling the Year 2000 problem in the school or school district: (1) Becoming Familiar with the Year 2000 Problem; (2) Establishing a Y2K Action Team; (3) Assessment: Determining the extent of your problem; (4) Awareness: Making your problem known; (5) Planning: Figuring out how you're going to proceed; (6) Remediation: Making your fixes; (7) Testing: Making sure everything works; and (8) Implementation: Using your compliant systems. At the beginning of each step is a timeline indicating a progression point (the guide aims for Year 2000 compliance by September 9, 1999). Each step identifies time on task, reason for that particular step, issues to address, and pertinent information for accomplishing the step. Appendices provide additional/more detailed information on: key dates to consider; embedded devices; managing the Y2K compliance of suppliers; sample letter to vendors; contract and procurement language; contingency planning; remediation in urban school districts; and resources and links. Throughout the guide are two special designations (see page 1 for symbols) indicating that supplementary material is available at a particular appendix or a web site. (AEF)

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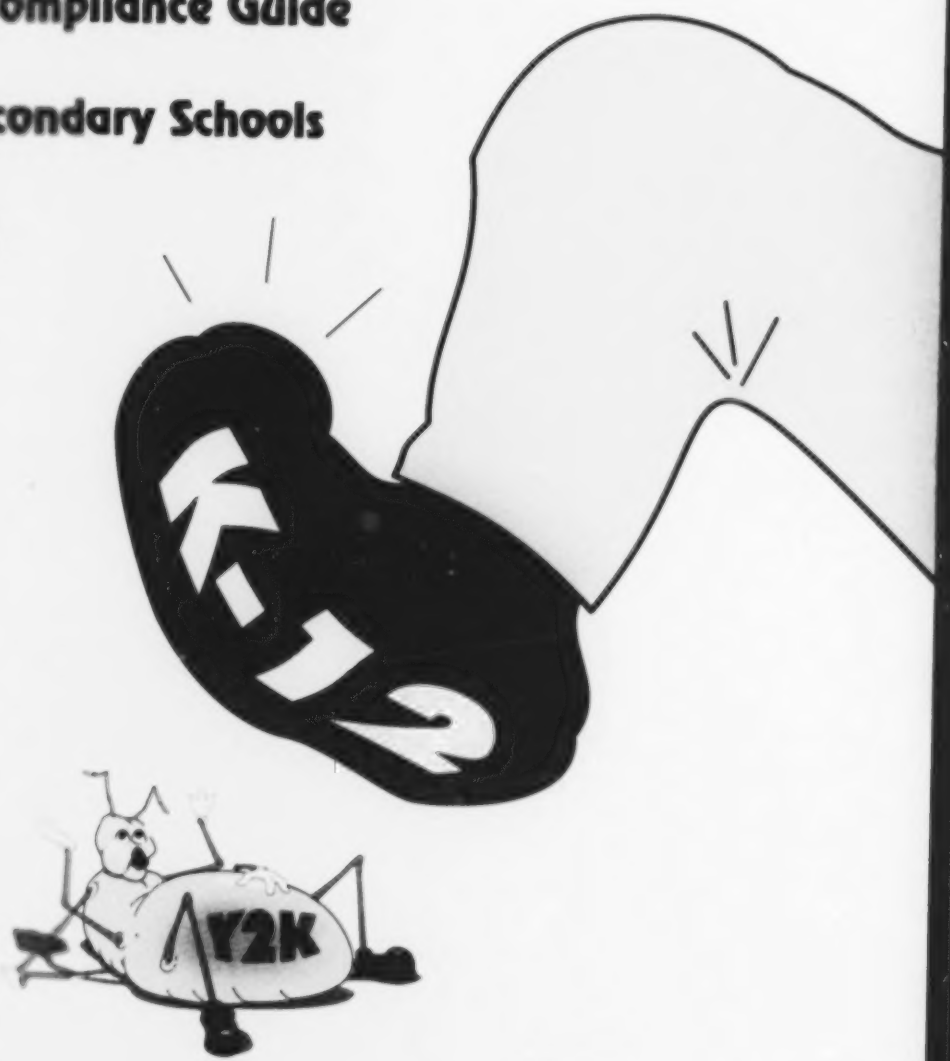
# Squashing the Millennium Bug

ED 423 888

## A Year 2000 Compliance Guide for Elementary/Secondary Schools and School Districts

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U.S. Department of Education

Council of the Great City Schools

# About this Guide

This guide was developed by the Council of the Great City Schools, in partnership with the U.S. Department of Education, to assist the nation's elementary/secondary schools and school districts address their Year 2000 (Y2K) problem. The information contained in this guide is not intended to provide a complete solution to the Y2K problem but hopefully help those who read it to understand, break down, and address the problem effectively and efficiently.

## Who Should Read This Guide

This guide should be read by any individual interested in addressing the Y2K problem in his or her K-12 school or school district. Due to the technical nature of the problem, an effort has been made to present as much of the information as possible in layman's terms. To a large degree, details and heavy technical jargon have been left to the appendices and on-line resources.

## Additional Material

Throughout the guide, you'll notice two special designations indicating that supplementary material is available at either the website listed below or a particular appendix of the guide. Again, these resources tend to be a lot more detailed and technical in nature.

Additional material may be found at:
http://www.cgcs.org/y2k12/resources.htm

Additional material may be found in the designated appendix of this guide

## What You Should Do *After* You Read This Guide

After reading this guide, visit the following website:

http://www.cgcs.org/y2k12/

Here, you can add your name and e-mail address to a listserv that will keep you informed of new developments and information related to the Y2K problem. The website also has additional material for the K-12 environment not referenced in this guide.

**Acknowledgements**

The completion of this guide would never have been possible without the tremendous help of the Miami-Dade County Public Schools and the New York City Board of Education. Special thanks go out to Dan Tosado, Victor Diorio, and Bob Parlato for all their hard work in helping put this document together.

**Disclaimer**

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# I. Squashing the Millennium Bug Step-by-Step

This first chapter presents a series of steps that should help steer you through the task of tackling the Year 2000 problem in your school or school district. This approach was developed to help break the problem down into small, manageable parts which are addressed by the following steps:

Step 1: Becoming Familiar with the Year 2000 Problem
Step 2: Establishing a Y2K Action Team
Step 3: Assessment: Determining the extent of your problem
Step 4: Awareness: Making your problem known
Step 5: Planning: Figuring out how you're going to proceed
Step 6: Remediation: Making your fixes
Step 7: Testing: Making sure everything works
Step 8: Implementation: Using your compliant systems

## Suggested Timeline

Time on Task: ..... 2 days

At the beginning of each step, you'll notice a timeline indicating where you should be throughout the process. It should be noted here that the guide aims for Year 2000 compliance by September 9, 1999 (9-9-99). While this particular date is significant in addressing the Y2K problem, it is not the date by which your school or school district must be fully compliant. Targeting this date, however, will give you more than three full months of cushion to actually use your "new" systems before reaching January 1, 2000. If the timetable doesn't suit you, however, feel free to come up with your own; one which takes into account the circumstances of your school or school district.

In developing your own timeline, it's important that you build it around the priorities you've set and when you anticipate problems will start to occur (Time Horizon to Failure). These will be your drivers in determining the various target dates and they're covered later on in the guide.

### Time on Task

Underneath each timeline is a "Time on Task" indicator suggesting how much time is likely to be needed to accomplish the step. The number of days or weeks prescribed is not intended to correspond with the timeline since everyone won't be starting this process simultaneously. The step should be completed, however, by the point indicated to allow enough time for subsequent steps to occur.

If you finish a step early, proceed to the next one. Don't wait for time to pass simply because the timeline may allot more than you need. Keep moving—it will give you more leeway in the end. And if you're starting this process late, try to catch up to where we are on the continuum.

### Good Luck

No matter how large your school or school district, addressing the Year 2000 problem is going to be a big task to undertake. The hardest part about it, though, is getting started. Hopefully this guide will make it easier for you to do that. Good luck.

# Step 1:

## Becoming Familiar with the Year 2000 Problem

Time on Task: ..... 5 minutes

### The Problem

The Year 2000 (Y2K) problem stems from a fundamental inability of computer hardware and software to correctly process dates into the next century. This problem results from computer hardware and software that is unable to do three things:

1. Store four-digit years;
2. Recognize the leap year in the Year 2000; and
3. Handle special "reserved" dates.

*Four-Digit Years*

The most common of these three problems stems from devices that are unable to translate two-digit years into four-digit years (e.g., 1-1-98 into 1-1-1998). This becomes particularly problematic when we reach the Year 2000 because older systems consider the date 1-1-00 to be January 1, 1900, and not January 1, 2000. If the computer were to try and calculate someone's age this way, it would kick out something like negative 68 years old. This particular problem is likely to surface even before we reach the Year 2000 because some computer systems are designed to make calculations based on dates on or after January 1st, 1999 (e.g., graduation dates, projected retirement dates, etc.). The point at which these problems are expected to begin happening is known as "Time Horizon to Failure" which is further addressed on page 15.

### *Leap Year Recognition*

Back when many computer systems were first developed, some programmers didn't realize that the Year 2000 was a leap year. This means that there will be a February 29, 2000, and computers need to acknowledge this or else all dates following it will be off by one day.

> A leap year is a year which is divisible by 4 but isn't one if it is divisible by 100, unless it's divisible by 400. That means that the Year 2000 is a special leap year that only happens once every 400 years.

### *Special Dates*

This problem exists in older, as well as recent, computer programs which use special dates like 9-9-99 to represent certain functions such as "Save this record forever" or "Delete this record after 90 days." Once these dates are encountered in these special computer programs, either prior to or beyond the Year 2000, erroneous results are likely to occur in data output.

## Why the Problem Exists

The Year 2000 problem arose from design limitations originally imposed over twenty years ago when processing power was meager and memory and storage costs were much higher than today. Since each digit uses up memory, hardware and software developers simply omitted the "19" in front of the year to conserve space and money. Plus, back then, the Year 2000 was simply too far off to worry about anyway.

The problem is global in nature affecting mainframe systems, personal computers, telephone systems, data communication equipment, and embedded processors found in such things as alarms, heating/cooling units, elevators, and various types of office equipment. The inability of these devices to correctly process dates into the next century represents significant operational risk to all organizations that use them.

## Time Dilation (a.k.a. the Crouch, Echlin Effect) WWW

One of the more recent developments in the Y2K problem is what's being called "Time Dilation," also known as the "Crouch, Echlin Effect." Time Dilation is a random jump in date and time that occurs at boot-up of affected computers and embedded systems only after rollover to the Year 2000. It *does not* occur on these systems prior to the turn of the century unless the date is set ahead to the Year 2000. On affected systems, the time or date reported by the

system at start-up can be incorrect, usually a time or date in the future, but occasionally a time or date in the past. On most systems, only one element of the time and date will be incorrect, that is, the time may be correct, but the month may be incorrect, or the time and month may be correct, but the year may be incorrect. On some systems, any or all of the time and date elements may be incorrect. As you can probably tell, this is a rather technical issue, one that's been left to the website to better explain.

### Potential Impact

If the Year 2000 problem is not fixed, problems are likely to occur in those systems that use date sensitive information. Pay checks may not process properly, heating and cooling systems may fail, and student records may be corrupted. Depending on the situation, these outcomes fall into three categories:

- **No Impact** - Systems that are date sensitive don't fail and don't disrupt your process;
- **Selective Failure** - Systems that are date sensitive stop processing dates but still continue to function; and
- **Major Systems Failure** - Systems that are date sensitive either generate gibberish, produce erroneous results, or stop altogether.

# Step 2:

## Establishing a Y2K Action Team

Time on Task: ..... 5 days

### Why an Action Team?

Addressing the Y2K problem is simply too large a project to be handled by one person. No matter how big the problem is in your school or school district, involving the right people will make the task a lot easier. To accomplish this, you first need to assemble a Y2K Action Team. By doing so, you'll be tapping into the knowledge base that's needed to help solve your problem.

### Team Objectives

The objectives of the Action Team are to:

- Identify all processes and systems that are at risk due to the Year 2000 problem;
- Prioritize the need for repair; and
- Certify correct operation prior to and beyond the Year 2000.

### The Big Picture

Solving the Y2K problem is not a technical problem, it's a business management problem. The potential complexity and pervasiveness of the Year 2000 problem requires that a school or school district's methodology be top-down as well as bottom-up. Each operational department, division, and school within a district must plan for the delivery of uninterrupted, full-capacity, and error free services in the event of widespread systems failures due to the inability to correctly process dates into the next century.

This requires that all departments, divisions, and schools take a critical look at their dependence on computer systems in order to conduct business operations. This must be done even though certain operations are not perceived to be date dependent. Because computer hardware and software inherently use dates, each and every computer system is at risk.

### The Team's Role

The role of the Action Team should center on:

- Raising awareness of the problem;
- Communicating a plan to address it;
- Establishing an inventory of potentially affected systems;
- Eliminating duplicate efforts;
- Sharing resources and lessons learned; and
- Establishing any necessary contract vehicles.

This approach ensures that everyone is aware of the problem, is focused on a common solution, and is actively engaged in appropriate activities that relate to solving the problem.

### Selecting Team Members

Since the Year 2000 problem cuts across many different aspects of a school or school district's operation, many people are likely to be involved. If this is the case, you're going to want to identify individuals who are good at solving problems, as well as those with good technical backgrounds who are familiar with the applications, software, and equipment currently being used. Having one set of skills without the other can lead to an imbalance that may cripple your process. In selecting your team members, identify those people you know, or the types of people you think should be involved, who will be able to get the job done. And don't rule out the students—if they're motivated and savvy, they may be perfect candidates for your team.

### Top-Level Management

As was mentioned earlier, solving the Y2K problem requires a top-down as well as bottom-up approach. The people in the best position to understand and prioritize critical systems are your top executives (e.g., superintendents, deputy superintendents, directors, etc.). They are the ones who can defend your Y2K

planning and implementation efforts, allocate human and financial resources, and help set priorities. Furthermore, executive accountability ensures that all employees, not just the ones in the data centers or information technology departments, adjust their requirements for compliance in the face of uncertain Y2K events. Consider having top-level management represented on your Action Team or establish a separate Y2K Advisory Group to help guide and validate the team's efforts.

### Types of Issues Your Team Members Will Need to Address

In order to make informed decisions about who should be part of your Action Team, you first need to know the types of issues they're likely to face. The following is a short list of items that may need to be investigated in your school or school district. Don't limit yourself to this list, though. There may be other things unique to your situation that should also be checked out.

Computer Hardware & Software
Security Systems
Heating/Cooling Systems
Fire Alarms
Student Records & Attendance
Mainframe Applications
Local Area Networks (LANs)
Telephone Systems
Voicemail
Bell Scheduling Systems
Office Equipment (fax machines, copiers, etc.)

Your team should include individuals who have knowledge of and access to these types of systems.

### Identifying a Team Leader

Once you've identified all the members of your team, appoint one of them to be the leader of the group. Since a number of different things will be going on simultaneously, it's a good idea that the person in charge understands the big picture and can keep the project on task.

### Action Team Templates

Use the templates on the following pages to list the members of your Y2K Action Team. Two templates have been provided, one for individual schools and one for school districts. If you're establishing a team for your school district, you may also want to organize your top-level management into a Y2K Advisory Group.

## School Y2K Action Team

Use this School template to identify the members of your Y2K Action Team.

**TEAM LEADER:** _____

(e.g., Principal, Computer Teacher)

**Team Members:** _____

(e.g., Computer Teacher, Parent, Student)

_____

_____

_____

## School District Y2K Action Team

Use this School District template to identify the members of your Y2K Action Team.

TEAM LEADER: _____

Contingency Planner: _____

Business Processes: _____

IT Processes: _____

Non-IT Processes: _____

Vendor Compliance: _____

Validation: _____

Other(s): _____

_____

## School District Y2K Advisory Group

Also, identify the heads of the following departments to assist the members of your Y2K Action Team.

Technology: _____

Finance: _____

Operations: _____

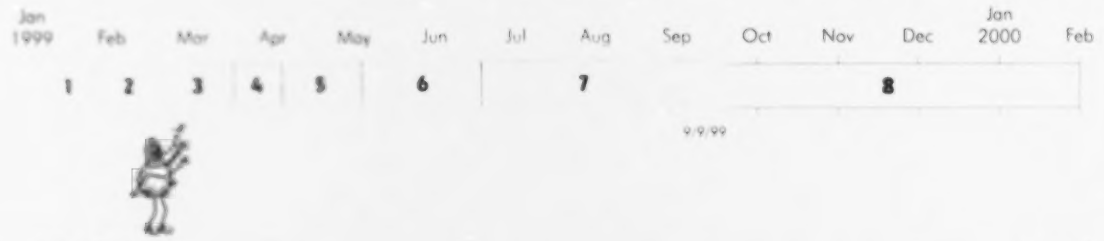
Personnel: _____

Other(s): _____

_____

# Step 3:

## Assessment: Determining the extent of your problem




Time on Task: ..... 4 weeks

### Why Assessment?

If you don't know the extent of your problem, you'll never know how to proceed in addressing it. The first assignment for your team is to inventory all the systems and devices that may have compliance problems. A good rule of thumb: if the device uses power to operate, jot it down.

In this step, the Y2K Action Team will examine each system, computer, device, and piece of electronic equipment in your school or school district to determine whether it needs correcting in its current state and, if so, the best solution for bringing it into Year 2000 compliance. Making any necessary replacements or modifications will then depend on the priorities you've set for your school or school district.

During this process, situations may arise where the current system and/or technology being examined falls short of user expectations and, therefore, will not only require date-related modifications, but may require systemic modifications and/or replacements. This step will require tough decisions about making improvements, some of which may not always be feasible due to the timeframe allotted and the costs associated with the particular solution.

### Inventory

An inventory of all your potentially problematic areas will become the roadmap for bringing your school or school district into Year 2000 compliance. The inventory needs to be carefully constructed and then broken down into priorities. One of the biggest risks here is that an incomplete inventory can cause whole processes to fail simply because something minor was left out.

## Questions to Ask Yourself

As you work through the assessment phase, ask yourself the following questions:

- Is the specific process critical and must the date problem be fixed or replaced to maintain system-wide functions?
- Should the date problem be fixed before 2000? Can fixing the date problem safely be deferred until after 1-1-2000 without affecting the functioning of the school or school district?
- Can the old program or hardware be discarded?
- Are there enough resources (personnel and dollars) to fix the problem and/or purchase new hardware?
- Does data input allow for entry of a century indicator or four-digit year?
- Are date displays on screens and reports in a consistent format that can be interpreted without ambiguity?
- Is date-related data stored so that the century can be explicitly determined for any year?
- Will date-related processing logic (i.e., calculations, comparisons, and sorts) operate correctly when dealing with dates after the turn of the century?
- Will the application correctly interface with all date data that is imported or exported?
- Will date validation routines correctly recognize the new century?
- Will the operating system and computer hardware on which the applications are running (e.g., data base management systems) be Year 2000 compliant?

## Identifying Who's Responsible for What

Once you've identified all the problems and issues that need to be addressed, it's important to identify who's responsible for remediating (fixing) them. If a central office manages a Student Information System (SIS) for all the schools in a district, for instance, then they're likely to be responsible for ensuring that it's made Year 2000 compliant. Make sure different areas of responsibility are clearly identified and made explicit so that everyone knows who's in charge of what. If you're a school district, you need to let your schools know what you're taking care of and what they're responsible for. If you're a school, you need to ask your central office what they're in charge of and what you must do. This type of communication will save all parties involved a lot of time in the long run and help everyone focus their efforts on solving the problem.

### Embedded Devices

As part of your assessment phase, you'll need to take into account those devices that contain embedded chips that are date sensitive. Embedded devices are devices that control, monitor, or assist in the operation of machinery or equipment. Examples of equipment that may contain embedded devices include certain types of elevators, heating/cooling units, security systems, and office equipment. As you make your assessment, be sure to include items that may contain embedded devices.

### Time Horizon to Failure

It is likely that some systems will begin to fail prior to January 1, 2000, because they perform forecasting and future processing. This is called "Time Horizon to Failure" and it should also be taken into account as you assess your overall situation. Systems that are slated to fail prior to the Year 2000 will probably need to be dealt with first and should, therefore, be high on your list of priorities.

### Rules of Priority

In the grand scheme of things, the most important issue you need to think about when addressing the Year 2000 problem is risk of failure: what are the organizational and personal consequences if a system, process, or piece of equipment fails? Here is a simple way of prioritizing non-compliance risk:

- **Life Threatening** - Failure could result in human death or injury;
- **Mission Critical** - Failure could be disastrous to your operating unit;
- **Priority** - Failure could have substantial impact on your operating unit; and
- **Low Priority** - Failure could result in trivial costs or minor inconveniences.

Life Threatening and Mission Critical systems, processes, and equipment items must be your first concern. Identify and evaluate items in these two categories as soon as possible to eliminate risk of failure.

### Checklist

Use the checklist on the following pages to identify areas that need to be addressed in your school or school district. Once you've identified them, prioritize each by checking off the appropriate box next to each one.

## Assessment Checklist

Use the checklist below to identify the issues that need to be addressed in your school or school district and then indicate each one's level of priority by checking off the appropriate box.

| | Mission Critical | Priority | Low Priority |
|---|---|---|---|
| ❑ Accounting Systems | ❑ | ❑ | ❑ |
| ❑ Backup Lighting | ❑ | ❑ | ❑ |
| ❑ Bell Scheduling Systems | ❑ | ❑ | ❑ |
| ❑ Building Access Systems | ❑ | ❑ | ❑ |
| ❑ Cable TV Systems | ❑ | ❑ | ❑ |
| ❑ CAD/CAE Systems | ❑ | ❑ | ❑ |
| ❑ Credit Card Systems | ❑ | ❑ | ❑ |
| ❑ CSU/DSUs | ❑ | ❑ | ❑ |
| ❑ Database Applications | ❑ | ❑ | ❑ |
| ❑ Electronic Card Catalogs | ❑ | ❑ | ❑ |
| ❑ Elevators/Escalators | ❑ | ❑ | ❑ |
| ❑ E-mail Client/Server Software | ❑ | ❑ | ❑ |
| ❑ Energy Metering | ❑ | ❑ | ❑ |
| ❑ Ethernet Switches | ❑ | ❑ | ❑ |
| ❑ Fax Machines | ❑ | ❑ | ❑ |
| ❑ File Backup Software | ❑ | ❑ | ❑ |
| ❑ File/Application Servers | ❑ | ❑ | ❑ |
| ❑ Fire Control Systems | ❑ | ❑ | ❑ |
| ❑ Food Refrigeration | ❑ | ❑ | ❑ |
| ❑ Generators | ❑ | ❑ | ❑ |
| ❑ Hardcopy Forms | ❑ | ❑ | ❑ |
| ❑ Heating/Cooling Units | ❑ | ❑ | ❑ |
| ❑ Inventory Systems | ❑ | ❑ | ❑ |
| ❑ Lighting | ❑ | ❑ | ❑ |
| ❑ Meal Counting Systems | ❑ | ❑ | ❑ |
| ❑ Media Distribution Equipment | ❑ | ❑ | ❑ |
| ❑ Metal Detectors | ❑ | ❑ | ❑ |
| ❑ Microwave Ovens | ❑ | ❑ | ❑ |
| ❑ Microwave Transceivers | ❑ | ❑ | ❑ |

| | Mission Critical | Priority | Low Priority |
|---|---|---|---|
| ❑ Mobile Phones/Pagers | ❑ | ❑ | ❑ |
| ❑ Network Hubs | ❑ | ❑ | ❑ |
| ❑ Ordering/Billing Systems | ❑ | ❑ | ❑ |
| ❑ PA Systems | ❑ | ❑ | ❑ |
| ❑ PBX Systems | ❑ | ❑ | ❑ |
| ❑ PCs | ❑ | ❑ | ❑ |
| ❑ Personnel/Payroll Systems | ❑ | ❑ | ❑ |
| ❑ Photocopiers | ❑ | ❑ | ❑ |
| ❑ Planning/Forecasting Systems | ❑ | ❑ | ❑ |
| ❑ Postage Meters | ❑ | ❑ | ❑ |
| ❑ Power Facilities | ❑ | ❑ | ❑ |
| ❑ Printers/Plotters | ❑ | ❑ | ❑ |
| ❑ Production Scheduling | ❑ | ❑ | ❑ |
| ❑ Purchasing Systems | ❑ | ❑ | ❑ |
| ❑ Satellite Dishes | ❑ | ❑ | ❑ |
| ❑ Scheduling Systems | ❑ | ❑ | ❑ |
| ❑ Security Systems | ❑ | ❑ | ❑ |
| ❑ Spreadsheet Applications | ❑ | ❑ | ❑ |
| ❑ Student Information Systems | ❑ | ❑ | ❑ |
| ❑ Telephone Systems | ❑ | ❑ | ❑ |
| ❑ Transportation Systems | ❑ | ❑ | ❑ |
| ❑ TVs | ❑ | ❑ | ❑ |
| ❑ Uninterrupted Power Supplies | ❑ | ❑ | ❑ |
| ❑ VCRs/Camcorders | ❑ | ❑ | ❑ |
| ❑ Video Conferencing Systems | ❑ | ❑ | ❑ |
| ❑ Voicemail Systems | ❑ | ❑ | ❑ |
| ❑ Word Processing Applications | ❑ | ❑ | ❑ |
| ❑ WWW Client/Server Software | ❑ | ❑ | ❑ |
| ❑ _____ | ❑ | ❑ | ❑ |
| ❑ _____ | ❑ | ❑ | ❑ |
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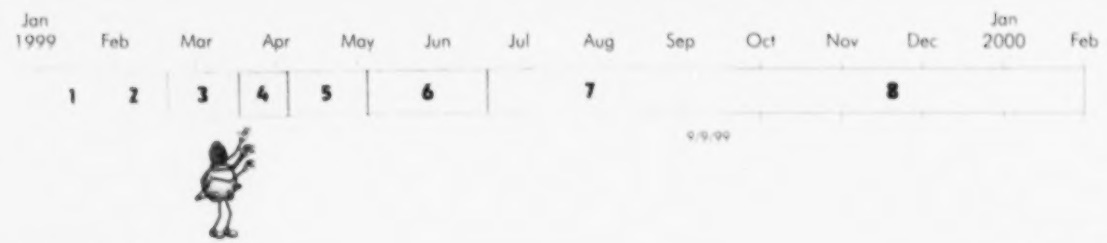
| ❑ _____ | ❑ | ❑ | ❑ |

# Step 4:

## Awareness: Making your problem known




Time on Task: ..... 3 weeks

### Why Awareness?

Everyone needs to know that the Y2K problem exists and that it has the potential to impact the operation of your school or school district. The more people that know about the problem, the more helpful they will be in assisting your team to address it. Also, given enough warning and information, people will be less likely to overreact.

This step provides guidelines for making everyone aware of the problem, its potential to cause disruption, its breadth and complexity in your school or school district, and your timeline for addressing it. And, while the Time on Task above suggests 3 weeks initially, the awareness phase is something that will probably continue throughout the duration of your project.

### Raising the Level of Priority

It is also important at this stage to ensure that the Year 2000 problem and its solutions become a top priority for your school or school district. Nothing should be more important than addressing this problem simply because it has the potential to completely stop your school or school district from functioning.

### Developing a Y2K Communications Strategy

Why do you need a Y2K Communications Strategy?

- Teachers, staff, parents, and students deserve complete and accurate information about the vulnerability of processes and facilities that are dependent on computers;

- External reporting to the Board of Education, PTA, state officials, etc., helps raise awareness and helps keep the systems renovation efforts on track;
- If serious Y2K failures DO occur (despite everyone's best efforts), communication with teachers, staff, parents, and students will become even more critical and you may need to implement alternative procedures (contingency plans) to report on progress in restoring normal systems; and
- The news media will increasingly bring this issue to public attention.

**Elements of a Y2K Communications Strategy**

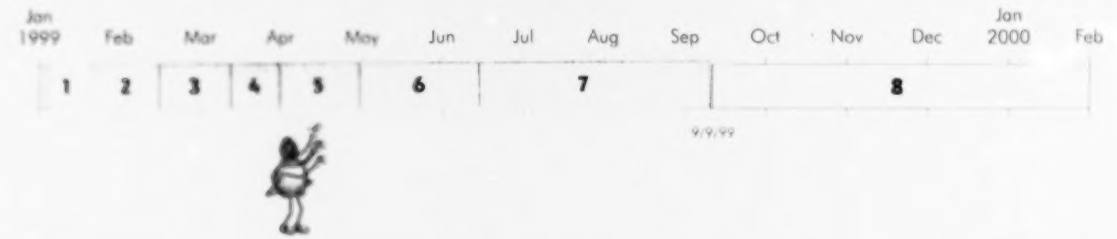
- Designate a Y2K communications office or officer (e.g., public relations office), to be responsible for answering all inquiries concerning the Y2K problem in your school or school district. This office should have an inventory of all the systems affected and should receive periodic updates from the Y2K Action Team; and
- Produce a series of clear Y2K status reports (either special letters or special portions of normally occurring reports/newsletters) concerning the school or school district's Y2K readiness efforts.

**Periodic Y2K Reports Should Include**

- Information on the nature of the Y2K computer problem and the extent to which your school or school district is dependent on computer systems;
- Summary of all relevant processes and services that may be affected by the Y2K problem (e.g., payroll, finances, student information, etc.);
- Current Y2K status of all relevant systems (e.g., renovated or replaced by a new system, tested, and implemented);
- Contingency plans designed to handle basic processes and services in the event of any Y2K-related systems failures; and
- Identification of the Y2K Action Team Leader to answer, or obtain answers to, all Y2K-related questions.

# Step 5:

## Planning: Figuring out how you're going to proceed




Time on Task: ..... 4 weeks

### Why Plan?

Now that you have a good understanding of the magnitude of your problem, it's time to set up a plan for how you're going to tackle it. A plan is a good idea because it can help you keep the various tasks going simultaneously, instead of addressing them one at a time, thereby slowing down the process.

### Organize Around Your Priorities

Devise your plan according to the priorities you've identified. There's no sense in fixing PCs right away if that was determined to be a low priority. The way in which you proceed also depends on how many people you've got on your team.

### A Word About Budgeting

There's really no way to provide you with an accurate estimate as to how much it's going to cost to fix your Year 2000 problem, but we can say that it is going to cost something. You, therefore, need to be prepared to spend money on things that aren't normally part of your budget process. To give you a better idea of the potential magnitude, the average amount of money being earmarked for Y2K among 40 of the nation's largest public school districts is $2 million. Cost obviously depends on the size of the district and the extent of its Y2K problem. (All the results of this survey appear in Appendix G of this guide.)

### Document Your Process!!!

Everything you do or that relies on someone or some entity outside your school or school district should be documented. If an outside agency says they're taking care of a Y2K-related issue that has the potential to impact your systems, get it in writing. In the unfortunate case where something goes wrong, it's important that you're able to demonstrate due diligence in your attempt to address the problem. If you've sent a letter to a vendor asking for clarity on whether or not one of their products is Year 2000 compliant and it subsequently fails, you're going to be a lot better off having a copy of the letter.

### Contingency & Business Continuity Planning

Now for the frustrating part. Before you go any further, you should know up front that, no matter how well you plan and no matter how well you execute it, something's going to go wrong. Take heart—here's what the Securities and Exchange Commission had to say in response to this in a report to Congress:

> It is important that one essential principal be understood. It is not, and will not, be possible for any single entity or collective enterprise to represent that it has achieved complete Year 2000 compliance and thus to guarantee its remediation efforts. The problems are best described as "risk mitigation." Success in the effort will have been achieved if the number and seriousness of any technical failures are minimized, and they are quickly identified and repaired as they occur.

So, it's probably safe to say that you're not going to be 100% compliant by the Year 2000. There's simply no way to know for sure. What matters most, though, is what you do between now and then to minimize the impact of any potential failures and how you handle the ones that slip through the cracks. This can be achieved by coming up with a contingency plan that addresses "what if" scenarios. In doing so, identify the critical functions that can either cause your mission to fail or severely degrade it. Then, determine the priorities associated with these functions and how they should be handled should they happen to fail. Any preparation you do now will help expedite and enable recovery later.

### Things to Consider in Contingency Planning

First of all, your plan shouldn't include reverting to the old system as one of its options. The old system is not ready for the Year 2000, otherwise you wouldn't be trying to fix it.

Second, don't forget to consider worse case scenarios. What would happen if your school or school district couldn't issue paychecks, telephones stopped working, or student records were damaged or destroyed? Most districts that are located in areas susceptible to natural disasters have "Disaster Recovery Plans" which address their mission critical issues in the event of a major systems failure. A Disaster Recover Plan is nothing more than a contingency plan taken to the extreme. Depending on your school or school district's circumstances, this may be something you want to consider developing. If you've already got a Disaster Recovery Plan then you should be in pretty good shape to deal with any unlikely catastrophic outcome brought on by the Millennium Bug.

### Elements of a Contingency Plan

A contingency plan for your school or school district should:

1. Identify those systems too important to assume compliance and what should be done in case they fail;
2. Outline steps to address the failure of systems of moderate to significant risk where non-compliance is a possible or likely outcome;
3. Outline steps to address the failure of systems of low risk where compliance efforts will not be completed in time or even attempted; and
4. Be explicit where no action will be taken for systems of no significant risk or a low likelihood of failure.

### As the Turn of the Century Approaches

As we approach January 1, 2000, there are a few things you may want to include as part of your planning. First, establish a Y2K Recovery Team consisting of your best people who are most familiar with fixing your school or school district's Y2K problem. Once the new millennium hits, their job will be to do nothing but go around and fix any glitches that crop up. Second, make strategic full backups of your data throughout the month of December, 1999, especially right before the Year 2000 hits. This way, if anything gets corrupted due to the year rollover, you'll have a fairly recent backup to revert to.

# Step 6:

## Remediation: Making your fixes

Time on Task: ..... 6 weeks

### Why Remediation?

It's time to make your fixes. For information systems, either mainframe or PC, now is when the actual programming code changes are made or replacement hardware is put in place. For those embedded devices that have been identified to fail, this is the step where they're upgraded or replaced. To address specific areas of remediation, refer to Chapter II of this guide, beginning on page 31.

### Your Options for Making Fixes

You've got several options in addressing the problems you encounter. Appropriate solutions for handling non-compliant systems include the following:

- **Abandon** - No longer needed or used;
- **Fix** - Can be revised to handle 21st century dates;
- **Replace** - Can be replaced with a Year 2000 compliant system or device (if it cannot be fixed or if the fix would be too costly); and
- **Defer** - Needs to be fixed or replaced, but not immediately.

### Two Types of Coding Fixes

With regard to fixing code, there are two primary solutions for Year 2000 compliance: *Expansion* and *Windowing*.

*Expansion*

In Expansion, all date fields are redefined to contain four digits for the year and any affected coding is modified accordingly.

*Windowing (a.k.a. Pivoting)*

In Windowing, only the logic is changed which prevents someone from having to modify the size of the date field in a database. Two-digit years greater than a specified cutoff point are assumed to be 20th century dates; years less than the cutoff point are assumed to be in the 21st century. For example, if the cutoff point is "39", the date 1-15-40 would be treated as 1-15-1940 and 1-15-38 would be treated as 1-15-2038. [After reading this example once through, you might think we mixed things up by accident. We haven't, though. Anything that has occurred in the latter part of this century should be interpreted as 19—, not 20—.]

### Finding Programmers


If you have software applications that were custom written for your school or school district which need to be remediated but you don't have anyone to do the work, have no fear, help is available. Keep in mind that labor costs can vary depending on your needs and the demand for programmers and, as we approach the new millennium, this cost is sure to go up. Visit America's Job Bank to locate programmers in your area http://it.jobsearch.org/.

### Cross-Application Compatibility

Wherever applications share data or interface with other systems, it is important to know what solution has been chosen for Year 2000 compliance. For instance, if Program A has been "Expanded" to include 4-digit years in all date fields but receives input data from Program B which is using "Windowing" (2-digit years), then the data must be expanded on receipt or else Program A will fail or produce incorrect results.

### Y2K Compliance of Outside Entities

Unfortunately, concerning yourself solely with your own Y2K problem isn't enough. Because you depend on others to function, you, therefore, need to concern yourself with how *they're* doing in addressing the problem.

# Step 7:

## Testing: Making sure everything works

Time on Task: ..... 12 weeks

### Why Testing?

Testing your remediated systems ensures that they're going to function properly before you put them into production. This is perhaps the most critical and time consuming of the eight steps since all systems must be tested with Year 2000 test data to ensure Y2K compliance. To do so, appropriate test data needs to be created that will simulate the Year 2000. Each program module must be individually tested as well as the interfaces (program-to-program interaction) to ensure that data and program integrity remain intact.

Also, don't forget about your other types of hardware and software. These include network operating systems, vendor-supplied software, PCs, and embedded devices which should also be tested to ensure Y2K compliance.

### Inter-Organizational and External Testing

Inter-organizational testing requirements for data exchange will need to be carefully coordinated and validated to ensure Y2K compliance. This testing is the responsibility of each division, department, or school involved in the data exchange. This same type of testing should be conducted with those entities outside your school or school district that you may impact or that may impact you (e.g., state education departments, billing agents, etc.).

### How to Test

There are several critical tests you should perform once you've remediated your systems. The best way to determine whether or not a system is ready for the new millennium is to test it as if it were already the Year 2000. Test that the

system will operate correctly after the date has changed from 12-31-1999 to 1-1-2000. Because the Year 2000 is also leap year, you should also make sure that the system will recognize 2-29-2000 as a valid date and that it will roll over from 2-28-2000 to 2-29-2000, and from 2-29-2000 to 3-1-2000. A list of other key dates may be found in Appendix A of this guide.

### Warning!!!

As you prepare to test your systems, keep in mind that there are risks involved in rolling dates forward on computers. Examples of risks are:

- Some computers keep track of when users access the system and will revoke or inactivate that user's password if they haven't accessed the system after a certain period of time;
- Records in a database that should be retained may be marked as expired and could be written over after a certain date is encountered; or
- Some software packages may be leased and you may be paying an annual fee to the vendor. Rolling the date past the end of the lease date may cause the software package to freeze up or generate error messages.

Before you test, think about the potential impact it will have on the way your systems function.

### Other Types of Testing

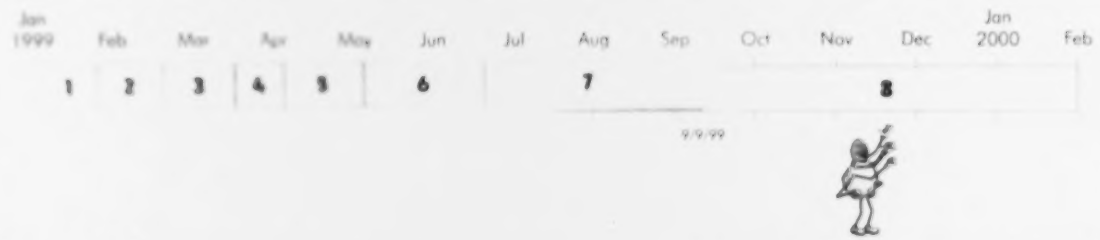
There are several other tests that you may want to carry out, depending on the functions of your systems. If they perform end-of-week, end-of-month, end-of-quarter and/or end-of-year processing, these functions should be tested. You should test that the system will forecast and retrieve data properly. Set the system to a date in the 21st century and test that the system continues to forecast properly as well as retrieves historical data prior to 12-31-1999.

### Creating a Test Environment

Whenever possible, testing should be carried out in a test environment to minimize the chance of corrupting systems that are currently in production. And be careful changing historical or backup files if you choose date expansion. You may lose an important audit trail. Consult with your auditors and legal staff before making modifications to your historical or backup files.

# Step 8:

## Implementation: Using your compliant systems




Time on Task: ..... (On-going from this point forward)

### Why Implementation?

This step involves putting remediated and new systems into production. The number of changed or new technology components can be significant and the implementation timetable should, therefore, be phased. In planning to make replacements, make certain that you allow enough time to replace all of the necessary components of that system.

### Developing an Installation Plan

Before you install your replacement or remediated system, you should develop an installation plan. The installation plan lists all the files and their related components that need to be moved out of the test environment and into the production environment. The plan should also outline the steps that need to be taken to ensure that the new system works properly. Your installation plan should include testing the new system once it is in production to ensure that it continues to work as expected.

### Making Backups First

As a safety precaution, you should make backups of your production files prior to implementing your new ones. If possible, you may even want to install your remediated or new system and run it in parallel to the old one to compare results.

# II. Remediating Specific Types of Systems

The sections of this chapter focus specifically on the major types of systems you'll encounter as you remediate your Year 2000 problem. They are:

A. PC Hardware

B. Commercial Software

C. In-House Applications

D. Administrative LANs and Instructional Labs

E. Office Equipment

F. Telephones and Voice Messaging

G. Embedded Devices

## A. PC Hardware

The most common hardware-related Y2K problem has to do with older IBM-compatible PCs and their BIOS (Basic Input/Output System) chip. Unfortunately, even some newer systems have this problem. The BIOS chip controls the computer's internal Real Time Clock and is responsible for supplying your operating system and other application software with the current date and time.

This section concerns internal clock/calendar problems inherent to IBM-compatible computers only. It is not applicable to Macintosh or other Apple computers since Apple computers do not have this particular hardware problem.

Since software applications are dependent upon the computer hardware for time/date information, it's best to start here and then move on to software verification.

As a start, it's a good idea to tag all of your computers with a label indicating whether it is, or is not, Year 2000 compliant or if it's pending verification. If done properly, this action can support your Awareness Step outlined earlier in this guide.

Keep in mind that all IBM-compatible PCs using 286, 386, 486 CPUs and even some Pentium-class processors have the potential to fail to roll over to the Year 2000 when they are turned on for the first time in the new century.

You should also note that some PC operating systems (Windows 95, Windows 98, and Windows NT) will actually "mask" the Year 1900 stored in the internal clock as the Year 2000 and will not write the corrected date back to the clock if it is updated from within the operating system. This can cause date-related errors within applications that rely directly on the Real Time Clock and will result in date-related errors within the operating system after the Year 2000 has arrived and "masking" has stoped.

**Examples of IBM-Compatible PCs**

- Compaq
- Dell
- Digital
- Gateway 2000
- Micron
- Toshiba

## Action Steps for Testing Roll Over to Y2K

The following "Power Off Test" can be conducted to determine whether or not a computer's internal clock is capable of rolling over to the 21st century.

Note: It is best to use an individual write-protected bootable system disk created on a DOS PC. As mentioned earlier, this is because several operating systems will "mask" century rollover which gives a non-compliant PC the false appearance of being compliant.

Step 1: Turn the computer on and go to the DOS prompt (C:\> or C:\WINDOWS>).

If you're using Windows 3.1 or 3.11, double-click the "Main" group in Program Manager and then double-click on the "MS-DOS Prompt" icon.

If you're using Microsoft Windows 95, Windows 98, or Windows NT, you cannot manually test the Real Time Clock from within the operating system. The PC must be booted from an actual DOS diskette.

Note: You will not get accurate results from a diskette formatted by Windows 95, Windows 98, or Windows NT. The diskette MUST be an actual DOS diskette.

Step 2: Type the word "date" on the same line as the C:\> or C:\Windows>. The system will respond with the date and give you an opportunity to change it.

On the same line as "Enter new date:" type the date "12-31-1999" and press [Enter]. You must enter the year using 4-digits, even if the system displays a 2-digit year.

Step 3: Type the word "time" on the same line as the C:\> or C:\Windows>. The system will respond with the time and give you an opportunity to change it.

On the same line as "Enter new time:" type the time "23:59:00" and press [Enter].

Step 4: Type "exit" and press [Enter] to return to Windows. Turn the computer off and wait at least one minute.

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Step 5: Turn the computer back on and return to the DOS prompt. Type "date" at the DOS prompt and press [Enter]. If the date reads 01-01-2000 then your PC has passed the test. If the date reads 01-01-1980, 01-01-1900, or something else, the PC is not compliant and you should refer to the options at the end of this appendix for remediating this problem.

Step 6: If you are keeping track of PC compliance, record the PC's status and attach the appropriate identification tag or sticker to the PC.

Step 7: Return the system to normal by repeating Steps 2 and 3 using the current date and time. When finished, type "exit" and press [Enter] to return to Windows.

**Action Steps for Testing Leap Year**

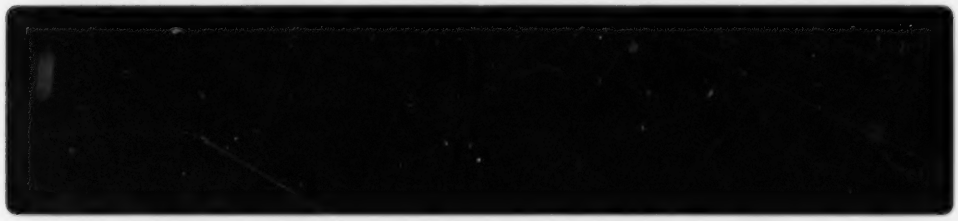
The following "Leap Year Test" can be conducted to determine whether or not a computer's internal clock is capable of recognizing the Year 2000 as a leap year. If you wish to test some other key Y2K-related dates, a comprehensive list has been provided in Appendix A of this guide.

Note: This test is not required if the PC has already been determined to be non-compliant by the preceding test.

Step 1: Go to the DOS prompt (refer to Step 1 on the previous page).

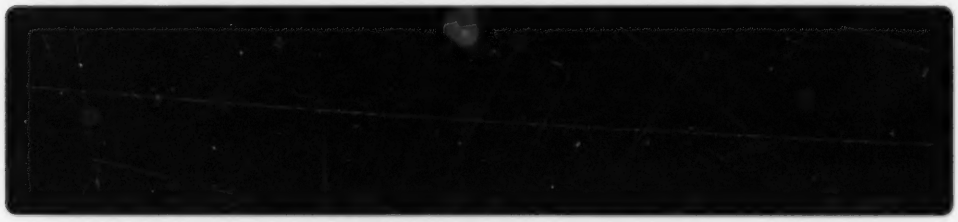
Step 2: Type the word "date" on the same line as the C:\> or C:\Windows>. The system will respond with the date and give you an opportunity to change it.

On the same line as "Enter new date:" type the date "02-28-2000" and press [Enter]. You must enter the year using 4-digits, even if the system displays a 2-digit year.



Step 3: Type the word "time" on the same line as the C:\> or C:\Windows>. The system will respond with the time and give you an opportunity to change it.

On the same line as "Enter new time:" type the time "23:59:00" and press [Enter].



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Step 4: Type "exit" and press [Enter] to return to Windows. Turn the computer off and wait at least one minute.

Step 5: Turn the computer back on and return to the DOS prompt. Type "date" at the DOS prompt and press [Enter]. If the date reads Tue 02-29-2000 or Tue 02-29-00 then your PC has passed the test. If the date reads 02-28-2000, 03-01-2000, or something else, the PC is not compliant and you should refer to the options below for remediating this problem.

Step 6: If you are keeping track of PC compliance, record the PC's status and attach the appropriate identification tag or sticker to the PC.

Step 7: Return the system to normal by repeating Steps 2 and 3 using the current date and time. When finished, type "exit" and press [Enter] to return to Windows.

### What To Do If Your PC is Not Compliant

If your computer fails either of these tests and is, therefore, not Y2K compliant, here's what you can do. Depending on the number of computers that need to be remediated, some options make more sense than others.

1. Get software that will either fix the problem or create a workaround (visit http://www.cgcs.org/y2k12/resources.htm to get a list of vendors providing software fixes).
2. Obtain a flash BIOS software update from the vendor that manufactured your system. Start by checking their website to see if they have updates available for download.
3. Replace the actual BIOS chip, the motherboard, or even the entire system.
4. Just leave it. If the computer still works and isn't used for date-sensitive purposes, then maybe it doesn't need to be fixed at all.

## B. Commercial Software

Commercial software, otherwise known as "shrink-wrap" or "off-the-shelf" software, for PC, Mac, and other Apple computers can have Year 2000 problems. Depending on the software version and the various ways in which it is used, either "patching" existing software or obtaining an upgrade to a new version may be required.

### Examples of Commercial Software

- Microsoft Access
- Microsoft Excel
- Microsoft Windows 3.x, 9x
- Microsoft DOS
- Lotus 1-2-3
- FoxPro
- DBase
- Culprit
- PhoneMaster
- Novell Netware

Each piece of software, both instructional and administrative, should be checked for Year 2000 compliance.

### Action Steps

Use the following steps to determine what actions, if any, will need to be taken to remediate the software applications you use.

Step 1: Identify the title and version number of the computer software.

All commercial software has the potential for Year 2000 problems. Some users of non-compliant software may never experience a problem, while others using the same software version could be unaware that they are using date-sensitive records that cause errors.

To identify the version, pay close attention when starting up the software program. When the software loads up, the name and version number are momentarily displayed. When using Windows applications, the name and version can also be displayed by clicking on the HELP menu option and then clicking on ABOUT.

Step 2: Compare the software title and version number with the Compliance Readiness Reference found on the New York City Board of Education website at http://www.nycenet.edu to determine if the application is Year 2000 compliant.

OR

Contact the software vendor and determine whether their application is Year 2000 compliant. Get a statement in writing from them verifying compliance or have them provide an upgrade as necessary. A sample letter to vendors may be found in Appendix D of this guide.

### What To Do If Your Software is Not Compliant

If it's determined that your software is not Y2K compliant, here's what you can do. Depending on the number of applications that need to be remediated, some options make more sense than others.

- Investigate how the software is being used and what might happen to programs that include date-sensitive processing. The software could continue to be used if programs have no date-sensitive processing. If an application requires date-sensitive processing, however, it may have to be upgraded or converted to another software product that is compliant.
- If the software is under a maintenance contract, contact the vendor to obtain a full upgrade or Year 2000 fix. Software patches can often be found for free download on vendors' websites, which, if installed properly, can eliminate the trouble of getting an upgrade. Should there be a critical software application that has a problem, the vendor may supply a free Year 2000 patch or more comprehensive service release. Also, make sure to check the hardware requirements for the software upgrade. You may need to upgrade the computer hardware first in order to use the new version.
- If the software is not under a maintenance contract, either purchase a new version, install a software patch to the existing version, or understand the consequences of doing nothing.

## C. In-House Applications

In-house applications are defined as those that have been developed privately for a specific task within a school or school district. These programs will have to be modified if they use a two-digit year for sorting, comparing or calculating. Most in-house applications are developed using commercial software packages, although many schools and offices use their own in-house programs for databases, spreadsheets, inventory and other custom applications.

All in-house applications will need to be reviewed for date-sensitive logic. Exposure depends on the version of the software used for development as well as how the software was used. Even if the software used to create the program is Year 2000 compliant, there may still be a problem with it. Therefore, it's a good idea to test and be sure.

Waiting to the last minute can be detrimental to date-sensitive logic that works on a school year as opposed to a calendar year. For example, a custom database that tracks budgeting information for the year 99/00 (1999/2000) may be affected starting as early as July, 1999, if the program is designed to forecast into the future.

**Examples of Commercial Software Used for In-house Applications**

- Access databases (incident reports, inventory, tracking)
- Excel spreadsheets (budget forecasting)
- Lotus 1-2-3 spreadsheets (budget forecasting)
- FoxPro databases (textbook inventories)
- PowerBuilder databases
- Programs created with Pascal, Clipper, Basic, Cobal, C++, etc.

**Action Steps**

Use the following steps as a guide to determine what actions, if any, will need to be taken to modify your in-house applications.

Step 1: Identify in-house applications used on PCs, Macs, or other Apple computers that perform data processing.

Step 2: Identify the programs that use two digits to represent the year (e.g., 99 instead of 1999).

Step 3: Determine if the two-digit year is used to sort, calculate, retrieve, or compare data.

Step 4: Compare the commercial software title and version number with the Compliance Readiness Reference found on the New York City Board of Education website at

http://www.nycenet.edu to determine if the application is Year 2000 compliant.

OR

Contact the software vendor and determine whether their application is Year 2000 compliant. Get a statement in writing from them verifying compliance or have them provide an upgrade as necessary. A sample letter to vendors may be found in Appendix D of this guide.

### What To Do If Your Application is Not Compliant

If it's determined that your in-house application is not Y2K compliant, here's what you can do.

- Use either Expansion or Windowing (covered on pages 25-26) to modify the program. Use the dates found in Appendix A to test for compliance.
- If the application was developed by an outside vendor or company, have them modify the program and test it.
- If you need to locate a programmer to help fix your problem, visit America's Job Bank at http://it.jobsearch.org to locate a someone in your area.

# D. Administrative LANs and Instructional Labs

Administrative LANs (Local Area Networks) and Instructional Labs are systems with computers linked for sharing files and/or printers, including servers, connected workstations and operating systems. All LANs should be checked for Year 2000 readiness and remediated as necessary.

**Examples of O/S Versions**

- Microsoft Windows NT
- Novell NetWare
- PC Server 325
- UNIX
- Linux

**Action Steps**

Use the following steps to determine what actions, if any, will need to be taken to ensure that your Administrative LANs and Instructional Labs are Year 2000 compliant.

Step 1: Identify the servers, workstations, operating systems, hubs, and routers used in your Administrative LANs and Instructional Labs.

Step 2: Look up the hardware type and software title with version number in the Vendor 2000 database at http://www.vendor2000.com to determine if they're Year 2000 compliant.

OR

Contact the appropriate vendor and determine whether their hardware or application is Year 2000 compliant. Get a statement in writing from them verifying compliance or have them provide an upgrade if necessary. A sample letter to vendors may be found in Appendix D of this guide.

# E. Office Equipment

Office equipment is not immune from the Year 2000 problem. Any piece of office equipment that uses dates can affected.

**Examples of Office Equipment That Use Dates**

- Fax machines
- Photocopiers
- Scanners
- Electronic time stamps
- Cellular telephones
- Paging devices
- Postage meters
- Video recorders
- Telephone answering machines
- Timers for lights
- VCRs

**Action Steps**

Use the following steps to determine what actions, if any, will need to be taken to ensure that your office equipment is Year 2000 compliant.

Step 1: Identify all the types of non-computer-related office equipment used in your school or school district.

Step 2: Look up the type of hardware in the Vendor 2000 database http://www.vendor2000.com to determine if it is Year 2000 compliant.

OR

Contact the appropriate vendor and determine whether their product is Year 2000 compliant. Get a statement in writing from them verifying compliance or have them provide an upgrade if necessary. A sample letter to vendors may be found in Appendix D of this guide.

## F. Telephones and Voice Messaging

Although it may seem anomalous, many telephone systems are date-dependent. The problem doesn't lie in the phone itself, but rather in the switch that operates the phone. Telephone systems, for example, may have faulty date-dependent functions which cause them to stop operating altogether, while others may allow calls to go through but will not date-stamp correctly.

In addition to the phone systems, voice-messaging systems may also require investigation if they operate as separate modules to the phone system. Normally, the same vendor that supplies the phone switch also supplies voice messaging, but it is possible to have a different voicemail system.

### Action Steps

Use the following steps to determine what actions, if any, will need to be taken to ensure that your telephone and voice messaging systems are Year 2000 compliant.

Step 1: Identify all the types of telephone and voice messaging systems that are used in your school or school district.

Step 2: Look up the type of hardware in the Vendor 2000 database http://www.vendor2000.com to determine if it is Year 2000 compliant.

OR

Contact the appropriate vendor and determine whether their product is Year 2000 compliant. Get a statement in writing from them verifying compliance or have them provide an upgrade if necessary. A sample letter to vendors may be found in Appendix D of this guide.

## G. Embedded Devices B

Many pieces of office and school equipment (elevators, fire alarms, security systems, etc.) have mixed manual and automatic controls. Computer chips have been embedded into the electronic components of these systems. For the most part, while these controls have made life easier, the negative effect of these embedded devices has surfaced as a result of the Year 2000 problem.

**Examples of Facilities and Systems with Possible Embedded Chips**

- School bells
- Utilities and electrical equipment
- Public address systems
- Fuel delivery systems
- Lighting systems
- Elevators, escalators
- Sprinkler systems
- Vending machines
- Refrigeration systems
- Intrusion and exit alarms
- Student identification systems
- Security systems
- Metal detectors
- Meal counting systems
- Fire alarm control systems
- Time clocks
- Heating, ventilating, air conditioning, climate monitoring systems (thermostats), building management systems

**Action Steps**

Use the following steps to determine what actions, if any, will need to be taken to ensure that equipment with embedded devices is Year 2000 compliant.

Step 1: Identify all the pieces of equipment that may contain embedded devices in your school or school district.

Step 2: Look up the type of hardware in the Vendor 2000 database http://www.vendor2000.com to determine if it is Year 2000 compliant.

OR

Contact the appropriate vendor and determine whether their product is Year 2000 compliant. Get a statement in writing from them verifying compliance or have them provide an upgrade if necessary. A sample letter to vendors may be found in Appendix D of this guide.

# III. Appendix

The following appendices provide additional, more detailed information about addressing specific aspects of the Year 2000 problem:

A. Key Dates to Consider

B. More on Embedded Devices

C. Managing the Y2K Compliance of Suppliers

D. Sample Letter to Vendors

E. Contract and Procurement Language

F. Contingency Planning

G. Remediation in Urban School Districts

H. Resources and Links

# Appendix A:
# Key Dates to Consider

**00-00-0000**

This nonexistent date is sometimes used to trigger special logic. It may be used in a remediation to replace an actual date used as a special logic flag. This will usually not be an issue unless modifications to parsing login are necessary to allow its use.

**1-1-1999**

The first date having "99" as a two-digit year field.

**4-9-1999**

Special-use Julian date (99th day of 99th year).

**7-1-1999**

Many state and local governments begin their 1999-2000 fiscal year on this date.

**9-9-1999**

This date is commonly used to indicate an unknown date in six-character (i.e., 9-9-99) data entry fields that do not require a leading zero. It was chosen because it was easy to type and yet far enough in the future to be easily differentiated from "real" dates. As 9-9-99 nears, it will become impossible for the computer user to know if the entry is valid or not.

**9-10-1999**

In systems that have used 9-9-99 as a never expire date, logic that allows deletion of data after a specified date may fail to protect data that should be restricted forever.

**10-1-1999**

The federal government begins its 1999-2000 fiscal year on this date.

**12-31-1999**

The last day that can be represented in standard six-digit date format without Y2K rollover risk. Since this date is sometimes used to trigger special logic, it must be established that the system is able to distinguish between a regular end-of year 1999 date and a special meaning date. For example, a license key intended to expire on 12-31-99 should not be confused with one that has no expiration date. This is also the start date for most Y2K rollover testing.

**1-1-2000**

The first day of the Year 2000. A system with a day-of-week function based on six-digit dates may change from Friday, 12-31-1999, to Saturday, 1-1-2000, at Y2K rollover. There is a possibility that the date will be misinterpreted as 01-01-1900.

**1-10-2000**

This is the first seven-digit date after rollover if leading zeros are not used for day and month representations. Parsing functions may fail when the number of digits representing the day changes.

**2-28-2000**

Day prior to leap year (to be used in rollover scenarios).

**2-29-2000**

The Year 2000 is a leap year. Program logic used to identify leap years may be incomplete. This would cause date-processing errors for the remainder of the year. The Gregorian calendar provides an algorithm for leap year. If the system recognizes that a year evenly divisible by 100 is not a leap year and fails to recognize that a year divisible by 400 is an exception to that rule, 2-29-2000 would be invalid.

**2-30-2000**

Invalid date. Test to ensure that leap year logic is functioning.

**3-1-2000**

This is the first day after leap-year day. The possibility exists that some part of a system may fail to recognize the Year 2000 as a leap year may lead to a condition where dates are no longer synchronized. Day of the week offsets can occur.

**10-1-2000**

This is the first seven-digit date with a two-digit month value. Parsing functions may fail when the number of digits representing the month changes.

**10-10-2000**

This is the first eight-digit date after rollover. Parsing functions may fail when the number of digits changes.

**12-31-2000**

The last day of the second millennia on the Gregorian calendar. The ordinal date 00.365 was the last day of 1900. Since 2000 is a leap year, its last day is 00.366. An incomplete algorithm for determining the length of the year might cause an ordinal-based system to transition into the new millennium a day early.

**2-29-2004**

First leap year not effected by a century or millennium transition.

# Appendix B:
# More on Embedded Devices

*http://www.nd.edu/~y2k/embedded/index.html**

The University of Notre Dame's Embedded Processes website lists a sampling of the products in which embedded processes are used. It was posted to raise the awareness of our constituents of how pervasive the Year 2000 problem is. It has been estimated that more than 40 million embedded processes have been installed in various products over the past 30 years. Some of these are NOT date-sensitive. However, the difficulty is in determining which ones are. They are found in such diverse products as the robot on the plant floor and the processors which control a nuclear plant. They will affect such diverse products as the VCRs used in the elementary school classroom and the devices which control dangerous experiments in a university research laboratory.

Embedded processes were installed in these products to accomplish specific functions. They are of interest to Y2K problem-solvers if their functioning is dependent on dates and if they will not process these dates correctly after 12-31-99.

In some instances, it will be difficult to determine the compliance status of embedded systems, because the chip might have been supplied by one manufacturer, the board by another, the firmware by yet another, and the installation and final testing by yet another. However, because failure to find and fix Year 2000 problems in critical products will irreparably affect our lives, we must attempt to remediate as many of them as we can.

*Miscellaneous Information that You Might Be Able to Use*

To identify embedded chip problems, answer these six questions for stand-alone (non-computer) electronic devices:

1. Does it operate with electricity? If no, the device is low risk. If yes, look further. Examples of low-risk items: tables, chairs, wind-up clocks, etc.
2. Does it have a battery or power supply? If no, it's low risk. If yes, look further. Some low-risk devices: lamps, hair dryers, electric pencil sharpeners, analog clocks, etc.
3. Does it have a display? If no, it's low risk. If yes, look further. Low-risk devices: paper shredders, power supplies, refrigerators, older microwaves, etc.
4. Does it have a microprocessor? If no, it's low risk. If yes, look further. Low-risk devices: television sets, stereo equipment, computer monitors, etc.
5. Does it have a calendar? If no, it's low risk. If yes, look further. Low-risk devices: microwave ovens, coffeepots, printers, most copier machines, etc.
6. Does the device use the calendar to schedule events? If no, it's low risk. Examples:

digital clocks or calendars that don't schedule anything, cameras, watches, etc. These are low risk because operation of the device is not dependent upon an accurate calendar. The device doesn't care what date is shown; it simply shows a date. Examples of high-risk devices: phone systems, fax machines, irrigation systems, energy management systems that control lights, heat, etc., based on time and date.

There are several issues regarding home equipment and Y2K.

1. There is a level of dependency on devices in the home that need to be addressed.
2. There is a definite cost consideration of replacement equipment.
3. Without Power, everyone faces inconvenience and in some cases critical problems for people with health related difficulties.
4. After 2000 the vendors may not be in business or able to repair or replace home equipment, (Load Centers, faxes, automated security systems, automated environment controls, etc.).

Therefore the home as well as the business should be assessed. If the Power Grid does survive Y2K, the home may not. Assess all essential home equipment, contact the vendor for Y2K compliance. You may not be able to do it post Y2K.

*These Might Have Embedded Processors*

- Answering Machines
- Anything to do with bar codes
- Call Accounting Systems (telephone)
- CCTV Systems
- Chilled and Hot Water Systems
- Computer-Bases Training (CBT) Systems
- Data Chamber
- Desk-Top Publishing Systems
- Digital Cameras
- Electronic Time Management (e.g. Personal Organizers)
- Electronically Controlled Clocks/Watches
- Embedded Systems (computer within "black box" from vendor)
- Facilities Management Systems
- Fax Machines
- Fire Alarms
- Flex-Clocks/Time Recording Systems
- GPS's
- Image Manipulation Hardware/Software (Photographic)
- Kitchen Equipment
- Lifts
- Lighting (switching systems)
- Machine Control Systems

- Mobile Phones
- Pagers
- Photocopiers
- Planned Maintenance System
- Plant Control Systems (e.g. Air Conditioning)
- Postage Franking Machines
- Pre-printed Forms (19__)
- Print Preparation software
- Process Control (DCS, SCADA, RTU, etc.)
- Programmable Logic Controls
- Safety/Security Systems
- Scientific Calculators
- Security Access Control Systems
- Still Camera Databacks
- Stock Control Systems
- Telephone System (PBX)
- Telephones
- Time Locks
- Video Recorders
- Video/Audio Editing Suites
- Video Cameras/Camcorders
- Voicemail Systems
- Waste Treatment Systems
- Word Processing (pre-set dates)

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**This document was prepared for the University of Notre Dame's internal education program. The University of Notre Dame accepts no responsibility for the information contained—or omitted from—this document.*

# Appendix C: Managing the Y2K Compliance of Suppliers

*by Andrew Butz**

Even if you have made sure all of your institution's computer systems are Year 2000 compliant, you could still face unexpected problems come New Years Day 2000. That is because your own computers aren't the only ones your school relies on. Now is the time to ensure that all of your suppliers and business partners are Y2K compliant too.

Suppliers that may need Y2K attention include those who provide essential materials such as fuel, food, and lab, medical, and office equipment, or who maintain and repair critical equipment. Others may include partners who handle institutional funds (banks, investment firms, accountants), work with institutional data (information systems contractors, data management vendors, testing services), or team with the institution in teaching, research, and service delivery in facilities like hospitals and clinics. Don't forget organizations who provide scholarships, grants, and significant kinds of operating revenue, including government agencies and philanthropic groups.

You may even depend on organizations with which you do not even directly deal-the suppliers and partners of your suppliers and partners. You need to evaluate how much of the needed due diligence is yours directly, and how much should be expected of-and requested from-your direct suppliers.

Like your institution's internal compliance program, your external program will require planning, communication, funding, execution, and testing, all on a timely basis. It will demand ongoing communications, because you will continually need information, updates, and assurances from your suppliers.

## Getting Started

To manage external Y2K compliance, you will need to:

- Identify each potentially affected institutional operation and determine how much it depends on outside vendors and other business partners.
- Identify key vendors and business partners, focusing on those whose services could not easily be replaced or supplemented without significant planning or cost.
- Determine what information, assurances, testing and other evidence of Year 2000 compliance your institution needs from each business partner.
- Establish a system for tracking each part of the compliance process. Ensure that your institution's files and your business partners' files document your requests for assistance and assurances regarding Year 2000 compliance, your business part-

ners' responses, all follow-up efforts to execute joint efforts, and any notice to business partners of events that could adversely affect your institution or its rights.

### *Contractual Relationships*

Chances are that current or planned written contracts define the relationship between the institution and its partners. Do those contracts address Year 2000 issues either expressly or by legal implication?

If a contract addresses Year 2000 issues directly, you need to determine whether the express provisions will meet your needs. If the contract calls for not-as-yet provided information, testing, or further assurances, you should take steps to request such performance, satisfy any preconditions owed by your institution, and evaluate the adequacy and completeness of the delivered performance. If contracts do not address Year 2000 issues directly, but may do so by implication, you will need to determine with legal counsel's help whether the provisions meet your institution's needs, including whether and how they can be enforced.

In some contracts, such as those with expressly limited warranties and representations, your institution may lack adequate Year 2000-related assurances and remedies. If so, consider renegotiating those contracts or the portions with Y2K implications. You can renegotiate either upon renewal, when your institution will have the most bargaining power, or as part of a request for assurances that your partner will be able to perform in the Year 2000 environment.

You may conclude that a contract holds the institution itself responsible for ensuring Year 2000 compliance. Where that arrangement is appropriate, you need to determine whether your internal Y2K program can deal with potential problems, or whether you need to address the issue with some other supplier or business partner. Whenever your institution negotiates or renews a contract with its business partners, the written contract should expressly allocate Year 2000 responsibilities.

### *Communicating with Your Partners*

Now that you are ready to contact your suppliers and business partners, what should you ask for? At a minimum, you should request specific information on your partner's Year 2000 compliance efforts and written assurances that their efforts will protect the institution's interests.

You will want to ask what the business partner is doing to achieve Year 2000 compliance, including efforts to identify critically sensitive systems and functions; find and fix, upgrade or replace non-compliant systems, programs, and equipment; and ensure that its own suppliers and service providers are also Year 2000 compliant. You also need to know who you will work with on shared efforts to achieve and test for actual Year 2000 compliance. If your business partner cannot or will not provide specific information right away, your request should indicate that you need to know when information will be available. If information is in fact unavailable, your request should indicate that you need express assurances that the partner will accept responsibility for losses resulting from its failure to provide goods and services or fulfill other responsibilities because the partner failed to institute and execute an appropriate Y2K compliance program.

If your partner hesitates to cooperate or provide specific information, or evades questions about contractual assurances, consider whether your institution should continue relying on that partner. At the very least, you will need to line up potential alternative partners who can demonstrate Year 2000 compliance.

*Implementing the Plan*

Initial contacts might indicate that your partner is not fully Y2K compliant but is prepared to work with you in good faith. In that case, you can begin working out the steps you believe will satisfy your institution's need for sufficient information, cooperation, and comfort.

That means briefing your partner's representatives on your own Y2K program so they can understand your compliance needs. This will help them pull together the necessary resources. This is particularly important in cases in which you will need to actually test systems to demonstrate compliance.

In some cases, it may be appropriate for you to provide Y2K help to your partner. Your assistance in working with your partner's partners may be an important step in ensuring the level of compliance your institution needs.

After implementing your external Year 2000 compliance program, be sure to keep internal decision makers informed about progress and setbacks. This will help the institution deal with the inevitable spate of failures, deficiencies, or other unpleasant surprises that may occur despite your best efforts.

In sum, you should take steps to determine if your current partners are Y2K compliant. You may have to be prepared to lessen your reliance on non-compliant and uncooperative partners, find alternative suppliers who are Y2K compliant, demand adequate disclosures and contractual assurance as part of each new contracting event, monitor your institution's partners for actual compliance, and (last but not least) document your own institution's due diligence in preparing to meet the Year 2000 problem.

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# Appendix D:
# Sample Letter to Vendors

[Date]

[Hardware/Software Company]
[Address]
[City, ST Zip]

To whom it may concern:

We are reviewing all our computing applications to determine readiness for processing in the Year 2000 and beyond. We have identified the following hardware and/or software products as being purchased or licensed from you, written by you or maintained by you. For each product, please provide the following information:

Is the product Year 2000 compliant?

[ ] Yes, compliant now
[ ] Will be made compliant
[ ] Cannot be made compliant

If the product is now Year 2000 compliant, please provide a written statement of what Year 2000 compliance means, and how it may be demonstrated. Please indicate the earliest version or model number and/or earliest release date of the compliant product.

If the product is to be made compliant, please provide a written statement of your plans for achieving compliance and your target dates for release.

Your cooperation and prompt response is greatly appreciated.

Sincerely,

[Name]
Year 2000 Coordinator

[Insert list of hardware/software products from the vendor, showing current model, version or release numbers, where appropriate.]

# Appendix E:
# Contract and Procurement Language

To ensure that information technology purchased by a school is Y2K compliant, the school may include a clause similar to the following in its contracts. The school may also wish to include other more specific requirements. E.g., the school may wish to require a specific date format needed to interact with its computer systems, to require that the items purchased meet specified tests for Y2K compliance or to provide for a longer than normal testing period. If a buyer specifies a particular brand name and model, then the buying agency is responsible for Y2K compliance, unless the item was designed by the contractor or its affiliate. Thus, the following clause presumes that a school will not specify a brand name and model unless the school has already determined that the item being purchased is Y2K compliant.

*Sample Clause*

DELIVERY OF YEAR 2000 COMPLIANT INFORMATION TECHNOLOGY

(a) Each hardware, software or firmware product delivered under this contract must be able to process accurately date/time data (including, but not limited to, calculating, comparing, and sequencing) from, into and between the twentieth and twenty-first centuries, and the years 1999 and 2000 and leap year calculations to the extent that other information technology, used in combination with the information technology being acquired, properly exchanges date/time data with it.

(b) If the contract requires that specific hardware, software or firmware products must perform as a system, then the requirements of paragraph (a) of this clause shall apply to those products as a system.

(c) The requirements of paragraph (a) of this clause do not apply to products specified by the [name of school or agency awarding the contract] on a "brand name and model" basis, unless the product was designed or produced by the contractor or one of its affiliates.

# Appendix F: Contingency Planning

*by B.L. Bruner**

No matter how carefully your institution prepares for Year 2000 problems, some systems will still fail because of external factors over which you have absolutely no control. That makes contingency planning an essential component of your Y2K strategy.

The direct costs of Y2K failures will be substantial, but they may pale in comparison to the indirect costs ranging from adverse publicity to litigation these failures will bring. In today's litigious environment, many will seek to hold institutional administrators and their agents legally and managerially accountable for both internal failures and the internal consequences of external failures.

You can avoid many of those consequences by planning solutions for Y2K failures that could affect personal safety and security, cause substantial costs or lost revenue, damage the institution's public image, or expose it to litigation risk. Your plan needs to go beyond the direct, operational impacts of the Y2K problem and address consequential actions and conditions as well. For example, it will take money and staff time to address the work-around solutions and infrastructure damage that the Year 2000 problem will cause.

### *What is Contingency Planning?*

Y2K contingency planning is a process that runs parallel to, and in concert with, your overall remediation and compliance effort. It is the process of anticipating how and when systems may fail or be disrupted, and crafting alternative approaches to minimize those possibilities. Contingency planning is not an eleventh-hour strategy that you can begin developing after dealing with the nuts and bolts of Y2K compliance. The two must happen simultaneously.

Be prepared to develop several alternatives for activities that may be disrupted by Y2K problems. Depending upon the circumstances, you may need to consider not just how you will carry out institutional functions, but also what the legitimate objectives of those operational functions might be. Among your choices: continue normal operations, sustain operations in a degraded mode, take a temporary hiatus, or completely rethink how to achieve the overall operational goal. Practically speaking, these options might be as drastic as substituting fully manual procedures for computer functions or even postponing the start of the 2000 spring semester.

### *Contingency Planning Step-by-Step*

If you are starting the contingency planning process now, recognize that you've got some catching up to do. You'll need to move quickly and deliberately. First, conduct a risk assessment of your institution's mission-critical processes (both business and academic) and high risk activities (personal safety and security, threats of litigation, etc.). The risk assessment is the basis for setting priorities and defining the contingency planning framework and scope.

Remember, at the contingency planning stage, you are assessing processes and activities, not computer system risks. Your school may face significant risks unless you identify and address all critical processes. For each selected mission-critical process and high-risk activity, follow these steps:

- Involve a cross section of functional and technical personnel in the effort. For example, a contingency plan for maintaining dorm security might involve staff from housing, student affairs, facilities management, and campus police.
- Set concrete contingency objectives for each process for example, continue normal operations, continue in limited mode, outsource, temporarily suspend operations, or cease operations altogether. Simplify objectives wherever possible.
- Assign responsibility and authority for developing the alternatives (including business and academic policy-and-procedure changes where required). It will often prove more expedient to rethink processes from scratch rather than building on existing processes.
- Quantify the resource requirements for the alternative, including staffing, materials, supplies, facilities, hardware, software, communications, services, and controls.
- Document, document, and document your alternatives and your contingency planning processes. This is your evidence of due diligence.
- Establish criteria for implementing each alternative. Trigger points might include such scenarios as falling behind on remediation efforts or computer-related failures such as service interruptions, security breaches, systems shut-downs, or data corruption.
- Design and conduct a testing or trial regimen that simulates reality.
- Develop training and communications to help people understand the alternatives. Put them into effect as soon as possible. Publicize procedures for implementing each plan and its alternatives. Don't let any action surprise anyone.
- Establish up-front criteria and procedures for returning to normal operating mode.
- Identify necessary post-contingency procedures for recovering lost, damaged, or reformatted data.
- Regularly revisit assumptions and progress. Successful risk avoidance is a dynamic process.
- Get outside review and assistance to ensure that you have exercised full due diligence.

Remember, you will need to follow each of these steps for every mission-critical process and high-risk activity you identify.

There will be winners and losers in the Year 2000 effort. The real winners will be those who do not just avoid major problems, but who use this opportunity to reexamine service levels and service delivery. The winners will see contingency planning as a strategic investment in improving the institution's image, competitive advantage, and efficiency. The clock is ticking now. Get started.

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# Appendix G:
# Remediation in Urban School Districts

The following is the outcome of a Y2K remediation survey conducted by the Council of the Great City Schools in the fall of 1998. Forty out of fifty of the nation's largest urban public school systems responded to the survey.

## Y2K Remediation Survey Results

(n=49 respondents from 40 districts)

Please specify ☑ the ***Operational Area(s)*** for which you are responsible:

| (29.8%) | (55.3%) | (4.3%) | (4.3%) | (6.4%) |
|---|---|---|---|---|
| Project Coordinator | MIS/Technology | Operations | HRD/Personnel | Finance/Budget |

1. a. Yes **(67.3%)** / No **(32.7%)** Do you have a ***Written Plan*** for achieving Y2K compliance in your area of responsibility?

   b. Yes **(80.0%)** / No **(20.0%)** Does the written plan address potential ***Embedded Technology*** issues in your area of responsibility?

   c. Yes **(72.7%)** / No **(27.3%)** Does the written plan address ***Data Exchanges*** with your trading partners in your area of responsibility (e.g., State Education Agency, County & City Governments)?

2. Using the scale below, please estimate ☑ the degree that the ***Awareness Phase*** for Y2K compliance has been achieved in your area of responsibility (i.e., information has been gathered and disseminated throughout the District):

| 2.0% | 4.1% | 10.2% | 16.3% | 46.9% | 20.4% |
|---|---|---|---|---|---|
| 0% | 1-25% | 26-50% | 51-75% | 76-99% | 100% |

3. Using the scale below, please estimate ☑ the degree that the ***Assessment Phase*** for Y2K compliance has been completed in your area of responsibility (i.e., Mission Critical Systems – the most essential functions that need to be repaired or replaced – have been identified):

| 0.0% | 0.0% | 8.2% | 22.4% | 49.0% | 20.4% |
|---|---|---|---|---|---|
| 0% | 1-25% | 26-50% | 51-75% | 76-99% | 100% |

4. Using the scale below, please estimate ☑ the degree that the ***Renovation Phase*** for Y2K compliance has been achieved in your area of responsibility (i.e., Mission Critical Systems have been repaired or replaced):

| 0.0% | 20.4% | 22.4% | 38.8% | 16.3% | 2.0% |
|---|---|---|---|---|---|
| 0% | 1-25% | 26-50% | 51-75% | 76-99% | 100% |

5. Using the scale below, please estimate ☑ the degree that the ***Validation Phase*** for Y2K compliance has been achieved in your area of responsibility (i.e., Mission Critical Systems have been successfully tested):

| **14.3%** | **22.4%** | **24.5%** | **32.7%** | **6.1%** | **0.0%** |
|---|---|---|---|---|---|
| 0% | 1-25% | 26-50% | 51-75% | 76-99% | 100% |

6. Using the scale below, please estimate ☑ the degree that the ***Implementation Phase*** for Y2K compliance has been achieved in your area of responsibility (i.e., Mission Critical Systems are Y2K compliant):

| **10.4%** | **20.8%** | **27.1%** | **33.3%** | **8.3%** | **0.0%** |
|---|---|---|---|---|---|
| 0% | 1-25% | 26-50% | 51-75% | 76-99% | 100% |

7. If not already compliant, please estimate ☑ the ***Date*** you would expect the Mission Critical Systems to be compliant in your area of responsibility: _____ Month _____ Year

8. Using the scale provided below, please estimate ☑ your ***Confidence Level*** that the compliance date will be met in your area of responsibility:

| Not Confident | **0.0%** | **4.2%** | **6.3%** | **41.7%** | **47.9%** | Very Confident |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | |

9. Assuming a *worse case scenario*, please use the scale below to indicate ☑ when a ***Contingency Plan*** would be completed to provide for a continuity of operations if Mission Critical Systems failed in your area of responsibility:

| **2.1%** | **10.6%** | **68.1%** | **4.3%** | **14.9%** |
|---|---|---|---|---|
| Completed | 1998 | 1999 | 2000 | When Needed |
| 1 | 2 | 3 | 4 | 5 |

10. What is your total budget for handling Y2K compliance issues in your area of responsibility?

**$2,100,000** (median)

11. a. Would you be interested in attending a special Y2K meeting with your colleagues from other large urban public school systems to focus on the Y2K problem?

Yes **(54.3%)** No **(45.7%)**

b. If so, what timeframe ☑ would you prefer?

| **20.0%** | **43.3%** | **36.7%** | **0.0%** | **0.0%** |
|---|---|---|---|---|
| Winter '98 | Winter '99 | Spring '99 | Summer '99 | Fall '99 |
| 1 | 2 | 3 | 4 | 5 |

## Responding Districts

(n=49 respondents from 40 districts)

Atlanta, Baltimore, Birmingham, Boston, Broward, Charlotte, Dallas, Dayton, Des Moines, Detroit, El Paso, Fresno, Ft. Worth, Houston, Indianapolis, Long Beach, Los Angeles, Memphis, Miami-Dade, Milwaukee, Minneapolis, Nashville, New Orleans, New York, Newark, Norfolk, Oakland, Oklahoma City, Omaha, Philadelphia, Pittsburgh, Portland, Providence, Sacramento, San Diego, Seattle, St. Louis, St. Paul, Toledo, and Tucson

# Appendix H:
# Resources and Links

The following are useful web-based Y2K tools and resources for the elementary/ secondary education community.

## Resources www

Database of hardware compliance ..... http://www.vendor2000.com
Database of software compliance ..... http://www.nycenet.edu
Database of Y2K programmers ..... http://it.jobsearch.org
Sample District Y2K Compliance Plan ..... http://www.dade.k12.fl.us/admin/newy2k/
Legal Issues ..... http://www.y2k.com/legalpage.htm

## Links www

### U.S. Department of Education's Year 2000 Project

http://www.ed.gov/y2k/

Includes updates on the U.S. Department of Education's preparations for Y2K, Frequently Asked Questions (FAQs), best practices, and useful tools and documents for schools and school districts.

### Council of the Great City Schools' Y2K12 Site

http://www.cgcs.org/y2k12/

Contains the contents of this guide, access to a Y2K K-12 listserv, and a database of other useful Y2K web-based resources for the K-12 education community.

### U.S. Department of Labor's Year 2000 Page

http://www.dol.gov/dol/cio/public/programs/y2k/y2kgrap.htm

Includes information about the Department of Labor's Y2K preparations and links to America's Job Bank and a number of related government sites.

### Microsoft Year 2000 Resource Center

http://www.microsoft.com/technet/topics/year2k/default.htm

Provides white papers on Y2K issues, Frequently Asked Questions about Y2K, an online seminar on the impact of Y2K on organizations, and specific details on Y2K preparedness of Microsoft products.

### MITRE

http://www.mitre.org/research/y2k/

Offers useful tools and information from the MITRE Corporation, a non-profit organization working with the Air Force Electronic Systems Center, and the Defense Information Systems Agency (DISA). See in particular the "COTS" (Commercial Off The Shelf) software Y2K compliance information.

**NSTL**

http://www.nstl.com/html/nstl_y2k.html

Provides information from a leading provider of testing services to business and industry, including the YMARK2000 testing tool which is downloadable from this site. In addition, NSTL lists a large number of hardware vendors with their Y2K compliance status.

**President's Council on Year 2000 Conversion**

http://www.y2k.gov

Provides an index of web resources on Y2K by economic sector (including education), a toolkit for understanding the Y2K challenge, best practices, and a link to America's Job Bank for employers and job seekers.

**Vendor 2000 Data Base (EDS)**

http://www.vendor2000.com

Includes a repository of over 129,000 (as of 9-15-98) vendors' hardware, software, and other specialized products, with their current Y2K compliance status. The site was developed and is maintained by Electronic Data Systems (EDS). To search for the Y2K status of a particular product, first select the vendor from an alphabetical listing, and then select that particular vendor's product, to determine which version is Y2K compliant.

**Washington Post's WashTech Millennium Bug Report**

http://www.washingtonpost.com/wp-srv/washtech/longterm/y2k/links.htm

Includes links to vendors and consultants, as well as other business, federal, state and local government resources.

**Windows Magazine: Year 2000 Crisis**

http://www.winmag.com/people/melgan/year2000/default.htm

Provides stories, columns, freeware and shareware to help individuals and organizations deal with the "Year 2000 Crisis."

**Y2K Law Site**

http://www.y2k.com/legalpage.htm

Covers legal issues pertaining to Y2K, prepared and maintained by the law firm of Williams, Mullen, Christian, and Dobbins. Includes papers, seminars, legal links, and contracting pointers.

**Yahoo! Year 2000 Coverage**

http://headlines.yahoo.com/Full_Coverage/Tech/Year_2000_Problem/

Provides complete coverage of the Y2K problem with recent news stories, live net events, government Web sites, and listings of Y2K consulting companies.

**Year/2000 Journal**

http://www.y2kjournal.com

A Web magazine dedicated to the discussion of the Y2K problem, covering specific aspects of the millennium bug. Includes links to a number of vendor Y2K sites.